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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
JOHNSON, VICKY A	
ART UNIT	PAPER NUMBER
3682	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/001,324	ICHIDA, TADASHI	
	Examiner	Art Unit	
	Vicky A. Johnson	3682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-13, 18, 20-34, and 39-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ethington (US 5,681,234) in view of Browning (US 5,261,858).

Ethington discloses an apparatus for controlling a first bicycle transmission and a second bicycle transmission which, in combination, sets a speed stage of the bicycle, comprising: a transmission position communication path for communicating information indicating the operational position of the first transmission and the second transmission (col. 9 lines 1-25); a transmission command communication path for communicating information for controlling the operation of the first transmission and the second transmission (col. 8 lines 1-12); a shift command communication path for communicating electronic shift commands to select a speed stage of the bicycle (col. 11 lines 31-37); a transmission control unit (72) operatively coupled to the shift command communication path, to the transmission position communication path and to the transmission command communication path for receiving the shift commands and the information indicating the operational position of the first transmission and the second transmission and for generating the information for controlling the operation of the first transmission and the second transmission (col. 9 line 1 – col. 10 line 66), and wherein

for at least one shift command requesting a shift from an origin speed stage to a destination speed stage that requires the operation of both the first transmission and the second transmission, the first transmission and the second transmission are set temporarily in a speed stage outside of a range between the origin speed stage and the destination speed stage (see Table II, to go from speed range 5 at a ratio of 2.16 to a speed range 8 at a ratio of 2.86, the rear transmission must first engage speed range 4 at a ratio of 2.00, which is outside of the range 2.16 to 2.86; also see col. 13 lines 18-22).

Ethington does not disclose that the transmission control unit receives at least one shift command requesting a shift through N speed stages to a destination speed stage, where N is an integer greater than one, the transmission control unit generates information for causing the first transmission and the second transmission in combination to move a total of M times to reach the destination speed stage, where M is an integer less than N.

Browning discloses a shift through N speed stages to a requested destination speed stage in a range where all speed stages are available (see Table 10), where N is an integer greater than one, for causing the first transmission and the second transmission in combination to move a total of M times to move to a different destination speed stage (col. 22 lines 4-11, a shift from 6 to 4 would be N=2 and M=1, the requested shift is 4, but since the shift from 6 to 4 is illegal the shift is made from 6 to 3, which according to table 10 requires the second transmission to only shift down so that M equals 1) that has a gear ratio in close proximity to a gear ratio of the requested

destination speed (see Table 1 to determine gear ratio), where M is an integer less than N (see Tables 1 and 10, and col. 4 line 47 – col. 5 line 68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Ethington to include a shift through N speed stages to a destination speed, for causing the first and second transmission to move a total of M times to reach the destination speed as taught by Browning in order to provide the fastest possible shift between any two gears (col. 4 line 47 – col. 5 line 68).

Re claims 2 and 23, Ethington shows the information for controlling the operation of the first transmission and the second transmission comprises a first signal for operating a front derailleur and a second signal for operating a rear derailleur (col. 10 lines 15-19).

Re claim 3 and 24, Ethington shows the transmission control unit comprises a table memory for storing a table containing the information for controlling the operation of the first transmission and the second transmission (col. 9 lines 37-49).

Re claims 4 and 25, Browning shows the first transmission moves to X first transmission positions, wherein the second transmission moves to Y second transmission positions, wherein X any Y both are integers greater than 1 (see Tables 1 and 10), and Ethington shows the table memory contains information for controlling the operation of at least one of the first transmission and the second transmission for each X first transmission position and for each Y second transmission position (col. 9 lines 37-49).

Re claims 5 and 26, Ethington shows the table memory contains information for moving only one of the first transmission and the second transmission by only one of the corresponding first transmission positions and second transmission positions to reach the destination speed stage in response to a shift command requesting a shift through N speed stages to reach the destination speed stage (col. 24 line 48 – col.25 line 44).

Re claims 6 and 27, Ethington shows the table memory contains information for controlling the operation of at least one of the first transmission and the second transmission for shift commands requesting a shift through a single speed stage and for shift commands requesting a shift through N speed stages (col. 24 line 48 – col.25 line 44).

Re claims 7 and 28, Ethington shows the table memory contains information for maintaining both the first transmission and the second transmission stationary in response to a shift command requesting a shift through N speed stages to reach the destination speed stage (col. 24 line 48 – col.25 line 44).

Re claims 13 and 34, Ethington shows a manually operated shift control unit operatively coupled to the shift command communication path (col. 7 lines 13-49).

Re claim 18 Ethington shows a manually-operated shift control unit operatively coupled to the shift command communication path (col. 7 lines 13-49); a speed sensor (82) operatively coupled to a speed communication path (col. 8 lines 13-22); and an automatic shift control unit operatively coupled to the speed communication path and to

the shift command communication path for automatically generating shift commands based on information received from the speed sensor (col. 7 line 50 – col. 8 line 32).

Re claim 20, Ethington shows a plurality of front sprockets (24); a front derailleur (36) for moving a chain among the plurality of front sprockets; a front derailleur motor (48) for moving the front derailleur; a plurality of rear sprockets (34); a rear derailleur (38) for moving the chain among the plurality of rear sprockets; a rear derailleur motor (54) for moving the rear derailleur; a front derailleur position sensor (134) for providing a signal indicating a front sprocket position of the front derailleur; a rear derailleur position sensor (134') for providing a signal indicating a rear sprocket position of the rear derailleur; wherein the front sprocket position of the front derailleur and the rear sprocket position of the rear derailleur set a speed stage of the bicycle transmission (col. 10 line 33 – col. 11 line 29); a transmission position communication path operatively coupled to the front derailleur position sensor and to the rear derailleur position sensor for communicating the signals indicating the front sprocket position and the rear sprocket position (col. 10 line 33 – col. 11 line 29); a transmission command communication path operatively coupled to the front derailleur motor and to the rear derailleur motor for communicating information for controlling the operation of the front derailleur motor and the rear derailleur motor (col. 8 lines 1-12); a shift command communication path for receiving shift commands to set a desired speed stage (col. 11 lines 31-37); a transmission control unit (72) operatively coupled to the shift command communication path, to the transmission position communication path and to the transmission command communication path for receiving the shift commands and the

signals indicating the front sprocket position and the rear sprocket position and for generating the information for controlling the operation of the front derailleur motor and the rear derailleur motor (col. 9 line 1 – col. 10 line 66); and Browning shows and renders obvious the transmission control unit receives at least one shift command requesting a shift through N speed stages to a destination speed stage, where N is an integer greater than one, the transmission control unit generates information for causing the front derailleur and the rear derailleur in combination to move a total of M sprocket positions to reach the destination speed stage that has a gear ratio in close proximity to a gear ratio of the requested destination speed (see Table 1 to determine gear ratio), where M is an integer less than N (see Tables 1 and 10, and col. 4 line 47 – col. 5 line 68).

Re claim 21, Ethington shows a change of gear ratio when the front derailleur moves from a first front sprocket to a second front sprocket is approximately equal to twice a change of gear ratio when the rear derailleur moves from a first rear sprocket to a second rear sprocket (see Table III; from A-1 to B-1 = .43; from A-1 to A-2 = .24).

Re claim 22, Ethington shows a method for controlling a first bicycle transmission and a second bicycle transmission which, in combination, sets a speed stage of the bicycle, comprising the steps of: receiving, by a transmission control unit, information indicating the operational position of the first transmission and the second transmission (col. 10 line 33 – col. 11 line 29); and generating, by the transmission control unit, information for causing the first transmission and the second transmission in combination to move (col. 9 line 1 – col. 10 line 66) a total of M times to reach the

destination speed stage; and Browning shows and renders obvious receiving, by the transmission control unit, at least one shift command requesting a shift through N speed stages to a destination speed stage, wherein N is an integer greater than one (see Tables 1 and 10, and col. 4 line 47 – col. 5 line 68).

3. Claims 14-16 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ethington (US 5,681,234) in view of Browning (US 5,261,858) as applied to claims 1-13, 18, 20-34, and 39-43 and further in view of Colbert et al (US 5,213,548).

Ethington shows a control unit as described above, but does not disclose a speed sensor operatively coupled to a speed communication path.

Colbert et al show a speed sensor (56) operatively coupled to a speed communication path (col. 6 lines 14-28); and an automatic shift control unit operatively coupled to the speed communication path and to the shift command communication path for automatically generating shift commands based on information received from the speed sensor (col. 2 lines 24-29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the control unit of Ethington to include a speed sensor as taught by Colbert et al in order to improve efficiency (col. 3 lines 24-28).

Re claim 15, Colbert et al show the automatic shift control unit generates shift commands based on bicycle speed (col. 3 lines 1-6).

Re claim 16, Colbert et al show the automatic shift control unit generates shift commands based on bicycle acceleration (col. 8 line 60 – col. 9 line 8).

Re claim 35, Colbert et al show receiving, by an automatic shift command unit, information from a speed sensor (56); and automatically generating shift commands based on information received from the speed sensor (col. 2 lines 24-29).

Re claim 36, Colbert et al show the automatic shift control unit generates shift commands based on bicycle speed (col. 3 lines 1-6).

Re claim 37, Colbert et al show the automatic shift control unit generates shift commands based on bicycle acceleration (col. 8 line 60 – col. 9 line 8).

4. Claims 17, 19 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ethington (US 5,681,234) in view of Browning (US 5,261,858) as applied to claims 1-13, 18, 20-34, and 39-43 above, and further in view of Spencer et al (US 6,047,230).

Ethington discloses the control unit as described above, but does not disclose a cadence sensor operatively coupled to a cadence communication path; and an automatic shift control unit operatively coupled to the cadence communication path and to the shift command communication path for automatically generating shift commands based on information received from the cadence sensor.

Spencer et al shows a cadence sensor (24) operatively coupled to a cadence communication path (col. 6 lines 6-12); and an automatic shift control unit (21) operatively coupled to the cadence communication path and to the shift command communication path for automatically generating shift commands based on information received from the cadence sensor (col. 6 line 66 – col. 7 line 8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the automatic control unit of Ethington to include a

cadence sensor as taught by Spencer et al in order to increase efficiency and safety (col. 2 lines 1-7).

Re claim 19, Ethington shows a manually-operated shift control unit operatively coupled to the shift command communication path (col. 7 lines 13-49); and Spencer et al show and render obvious a cadence sensor (24) operatively coupled to a cadence communication path (col. 6 lines 6-12); and an automatic shift control unit operatively coupled to the cadence communication path and to the shift command communication path for automatically generating shift commands based on information received from the cadence sensor (col. 6 line 66 – col. 7 line 8).

Response to Arguments

Some further comments regarding the Applicant's remarks are deemed appropriate.

The applicant argues that the Browning reference fails to meet the limitations of the claims because the references fail to show a transmission that is caused to move to a different destination gear ratio other than the one requested. The Ethington reference teaches the first transmission and the second transmission being set temporarily in a speed stage outside of a range between the origin speed stage and the destination speed stage (see Table II, to go from speed range 5 at a ratio of 2.16 to a speed range 8 at a ratio of 2.86, the rear transmission must first engage speed range 4 at a ratio of 2.00, which is outside of the range 2.16 to 2.86; also see col. 13 lines 18-22). Therefore the references meet the limitations of the claims.

The applicant's remarks have been accorded due consideration, however they are not deemed fully persuasive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vicky A. Johnson whose telephone number is (571) 272-7106. The examiner can normally be reached on Monday-Friday (7:00a-3:30p).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vicky A. Johnson/
Primary Examiner, Art Unit 3682